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of geological succession. He was satisfied that the tracks in the Potsdam Sandstone and the Trias, attributed to these animals, were not made by them. The earliest remains of Turtles were found in the Jura, and they are of the fresh-water type. Now the order of position among Turtles places marine types lowest, next fresh-water, and last land Turtles. There was a want of correspondence with the geological succession. From the descriptions of these specimens, and his own recollection of them, however, Professor Agassiz was satisfied that these fossils present a synthetic type, like the Crinoids among the Radiata; showing characteristics belonging to several types. A similar instance he had found among the living species of South American Turtles, from Brazil, the Podœnemyds; which, although belonging to the fresh-water type, yet present certain characters in the formation of the temporal region very similar to those of marine species, constituting a true synthetic type. Professor Owen obtained from the Chalk the next geological species which had been discovered, and they belong to the Chelmians, with some characters of the marine species, but not the general form,—another synthetic type. Professor Agassiz did not regard these forms as presenting true exceptions to the law of correspondence between geological succession and the grade of development in living species, but only as evidence of the existence in past ages, as well as the present, of what he had called *synthetic types*.

Professor Horsford announced a new and convenient method of determining the value of saltpetre for the manufacture of nitric acid, by ignition with sal ammoniac.

Four hundred and thirty-fifth meeting.

January 28th, 1857. — STATED MEETING.

The PRESIDENT in the chair.

The Corresponding Secretary read a letter from Manuel J. Johnson, of the Radcliffe Observatory, Oxford, accepting his election as Foreign Honorary Member.

Hon. Robert C. Winthrop exhibited a piece of the submarine telegraph cable, by which it is proposed to connect Europe with America.

Dr. Hayes remarked, that the copper wire in the centre, with its gutta-percha envelope, will be protected from all action of the salt water by the sulphurizing action of the sea. This would convert the outer layer of iron wire with which the cable is invested into an impervious sulphuret of iron.

Dr. Charles T. Jackson exhibited a terrestrial globe, showing by colored sections De Beaumont's *Reseaux Pentagonales*, by which he explained his theory of the elevation of mountain chains.

Professor Agassiz commented upon De Beaumont's theory as being extremely beautiful and ingenious; in it the whole earth is likened to an immense crystal, formed by the cooling of the heated mass, the mountain ridges appearing on the lines of greatest resistance to shrinkage. He stated, that there was a singular coincidence between the number of distinct systems of Fauna, as made out by naturalists of the present day, and the geological systems of De Beaumont. These are each from fifty-five to sixty in number.

Dr. Hayes exhibited specimens illustrative of his remarks at the previous meeting on the action and products of volcanoes.

Dr. Holmes said that he had recently observed an unusual anatomical fact, viz. the power of voluntary motion of the ear in a man. This is of extremely rare occurrence. The individual in question was able to draw backwards and upwards either or both ears, with considerable force, to the distance of from a quarter to half an inch; and this was a natural movement whenever he listened intently.

In answer to an inquiry from Dr. Holmes, Dr. Hayes explained the action of gas stoves in the generation of heat.

The following gentlemen were elected Resident Fellows, viz. : —

J. Lothrop Motley, Esq., in Class III., Section 3.

Hon. Charles Francis Adams, in Class III., Section 4.

Hon. George S. Boutwell, in Class III., Section 4.

Four hundred and thirty-sixth meeting.

February 10th, 1857. — MONTHLY MEETING.

The Academy met at the house of the Hon. Nathan Appleton. The President in the chair.

The Corresponding Secretary read letters from J. Lothrop Motley and Charles Francis Adams, accepting Fellowship, and also one from J. Stuart Mill, in acknowledgment of his election as Foreign Honorary Member.

Professor Agassiz exhibited a cast of a fossil shell, recently obtained at Santa Fé de Bogotá, which he had just received from Paris. The specimen was remarkably perfect, and belonged to the genus *Chryoceras*, which has been referred to the family of *Ammonites*. It is an interesting question, bearing upon the law of correspondence of geological succession and order of position in living races, To what order of the *Cephalopoda* do the *Ammonites* belong?

Professor Agassiz proceeded to point out the characters of the two great divisions of the class, the *Acetabulifera* and the *Tentaculifera*, showing that there are characters in certain species of each which resemble those of species in the other class. He did not regard the position of the *Syphea* in the chambered shells, whether dorsal or central, as of much consequence as a distinctive feature, but rather its relative position. The fact of its being central or dorsal depended merely upon the animals being coiled one way or the other. Among the *Gasteropoda*, examples of reversed shells are well known.

In conclusion, therefore, Professor Agassiz was inclined to refer the *Ammonites* to the class of *Acetabulifera*, separating them from the *Nautiloids* among the *Tentaculifera*, with which they have been hitherto associated. All *Nautili* are smooth, whereas all *Ammonites* are ornamented on the surface. The